

# MEMO 4D<sup>®</sup>

## Reshaping Mitral Repair

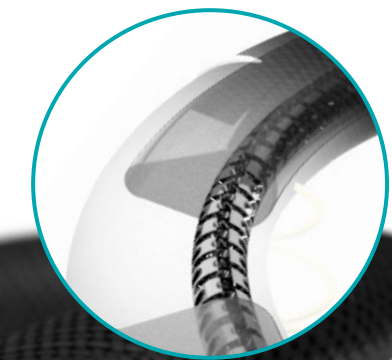


Designed to Best Support Your Technique

# MEMO 4D®

## Reshaping Mitral Repair

Designed to Best Support Your Technique



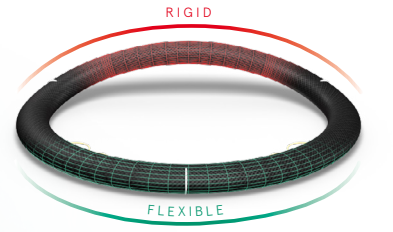
**Innovation Starts at the Core**

Unique Nitinol Cell Structure



**ReChord: Chordal Guide System**

Standardizes neochordae implantation

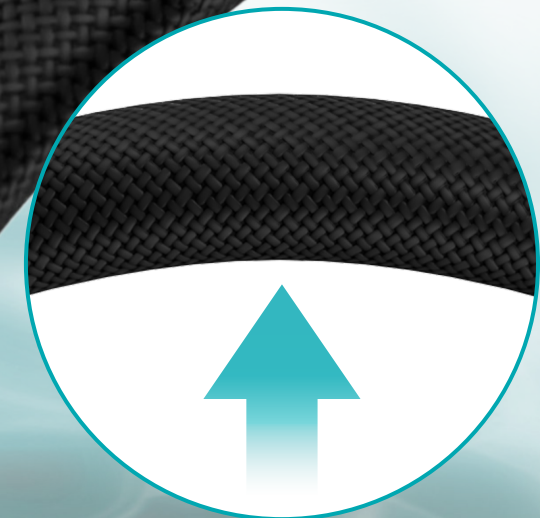
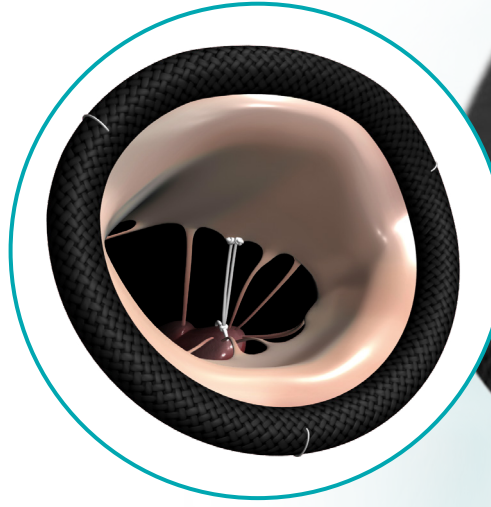


**Stability and Support**

Anterior rigidity and Posterior flexibility to best support systolic function

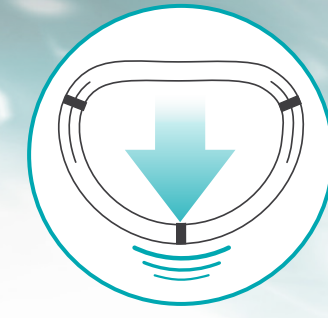
**Proven Annular Dynamics**

Truly physiological three-dimensional motion to ensure natural behavior



**Exclusive Gradual Saddle Shaping**

Optimizes the physiological geometry in enlarged annuli



**Progressive Increase of the Anteroposterior Diameter**

Helps accommodate excess leaflet tissue and reduces the risk of Systolic Anterior Motion (SAM)

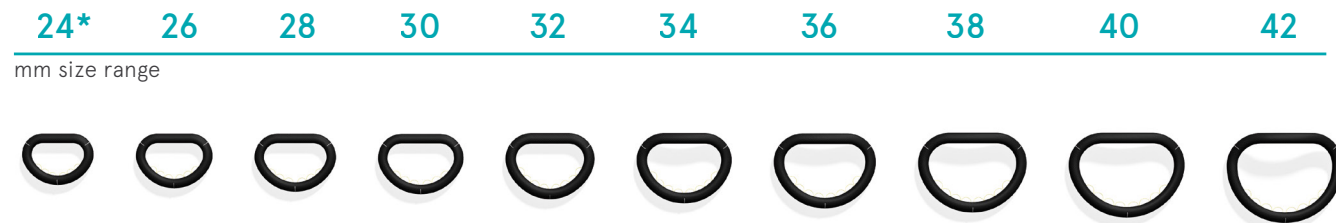


**Unique Range of Sizes**

Up to size 42 mm to treat large annuli

# Unique Range of Sizes

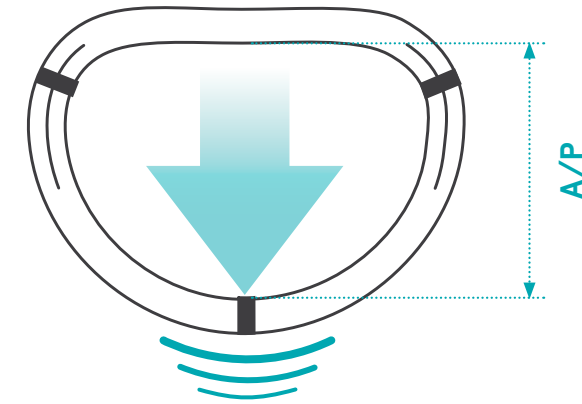
A complete range of sizes to meet a size-specific repair principle. The 42 mm size is unique to MEMO 4D



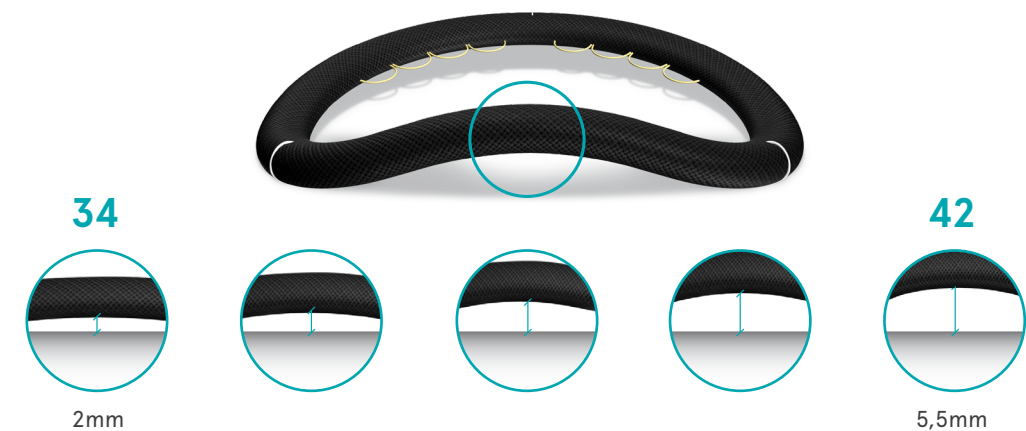
Large sizes are preferred by surgeons in facilitating repair in the presence of severe degenerative MR like Barlow's disease or big annuli.

# Progressive Increase of the Anteroposterior Diameter

The progressive increase of the anteroposterior diameter of MEMO 4D, from size 34 to size 42, helps accommodate excess leaflet tissue, while reducing the risk of systolic anterior motion (SAM).



## Exclusive Gradual Saddle Shaping



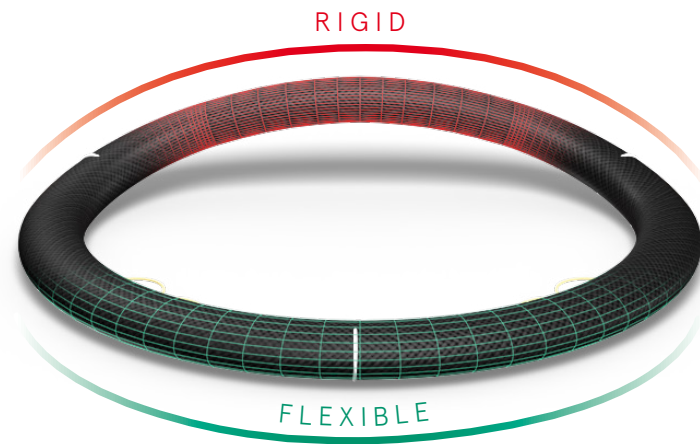
The anterior saddle shape, gradually enhanced from size 34 to size 42, optimizes the physiological geometry in enlarged annuli that have lost their three-dimensional profile.

\* Made to order

# Stability and Support

## The right balance of rigidity and flexibility to support any repair

MEMO 4D, semi-rigid annuloplasty ring, provides the stability and support to the annulus while providing dynamic flexibility of movement.



## The natural annular dynamics of the MEMO platform is clinically proven and acknowledged

*"MEMO 3D preserves annular dynamics and folding dynamics."*

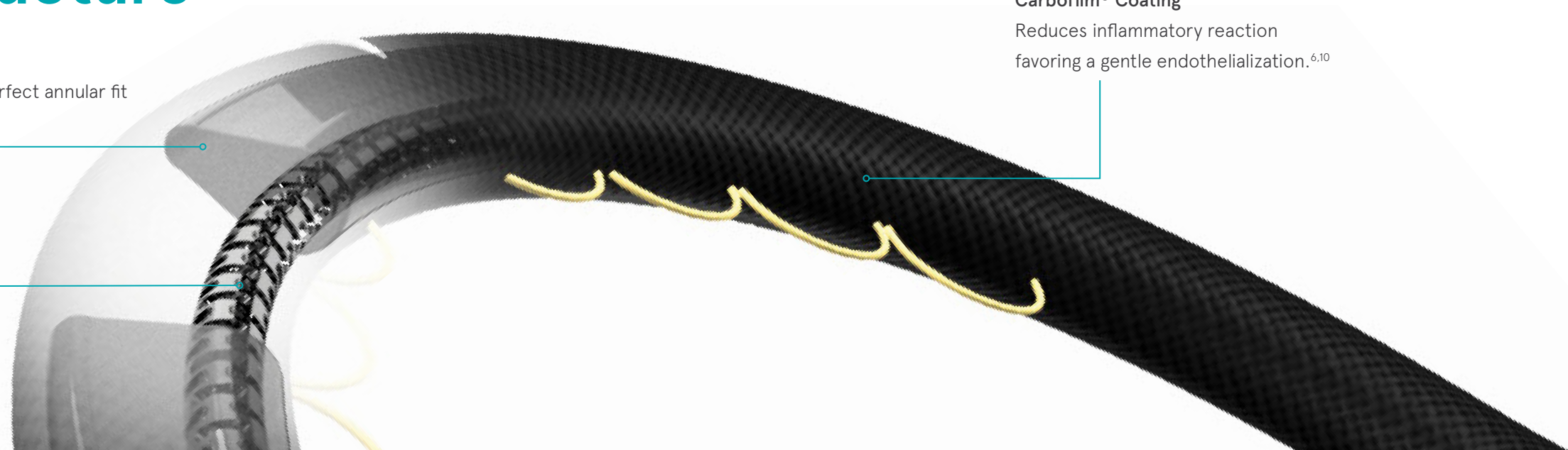
*"MEMO 3D allows for contraction during systole, an increased depth of coaptation of the leaflets, and an improvement in annular orifice area during diastole."*

# Three layer structure

**Oval silicone sheath**  
Ease-of-implant with a perfect annular fit

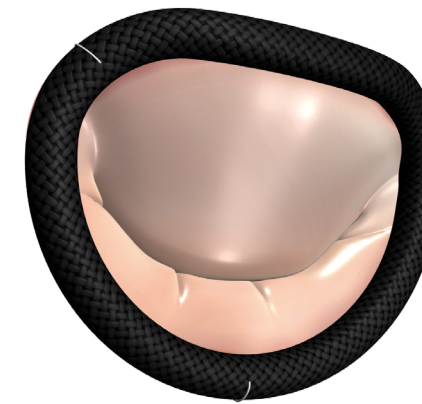
**Nitinol cell structure**  
Optimally accommodates the diastolic phase and provides consistent recovery of the natural systolic profile

**Carbofilm® Coating**  
Reduces inflammatory reaction favoring a gentle endothelialization.<sup>6,10</sup>

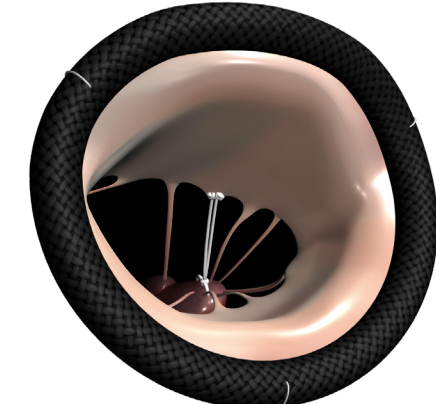


# Maximized Hemodynamics

Truly physiological three-dimensional motion of the mitral annulus with a natural anterior/posterior to lateral/lateral relationship to maximize blood flow,<sup>1,2,3,4,5</sup> even five years after implantation.<sup>6</sup>



**SYSTOLIC REMODELLING**  
Maximized Coaptation and Reduced Stress  
Nishi et al.  
Circulation. 2013;128:A16940



**DIASTOLIC DYNAMICS**  
Maximized Hemodynamics  
Ryomoto et al.  
Ann Thorac Surg. 2014 Feb;97(2):492-7

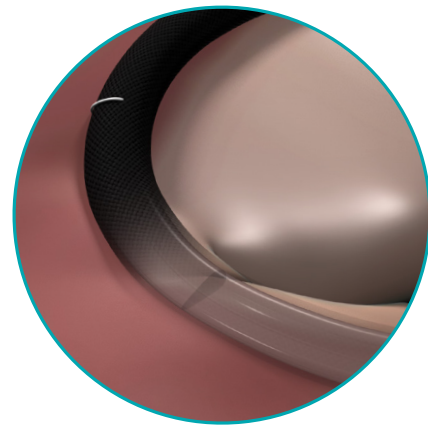
*"In our study, the semi-rigid MEMO 3D annuloplasty ring was associated with a better hemodynamic at rest and during exercise and clinical status."*

# Ease-of-Implant

The "slim fit" ring seats perfectly to the patient annulus



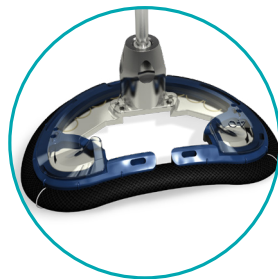
Wide, streamlined silicone filler facilitates suturability



Optimal fit to the mitral annulus

## A Fully Versatile Holder

### Chordal Window



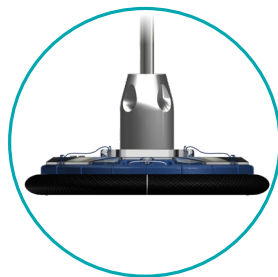
Neochordae can pass through the aperture

### One-Cut Removal

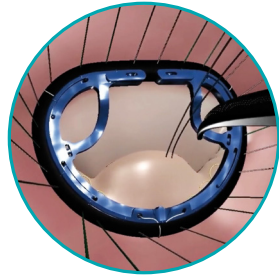


Single cut to unhook the whole holder

## Designed to Facilitate MICS Approach



Low-profile holder

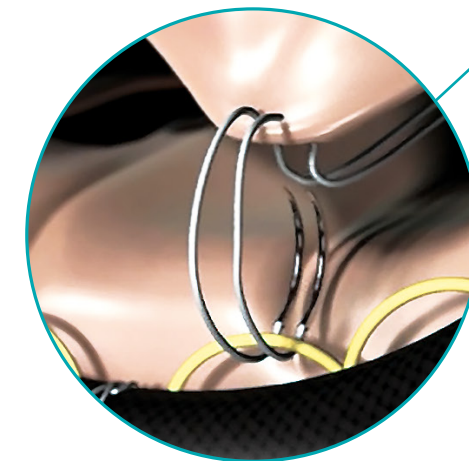
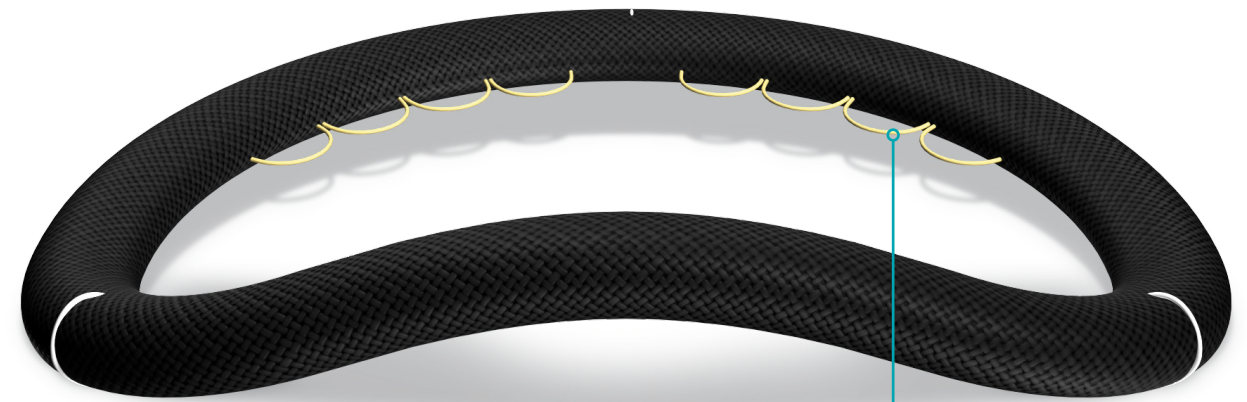


Ultra-slim template with two handles

# ReChord System

A chordal sizing system that aims to standardize neochordae implantation without the need for physical measurement

A series of loops in the posterior region act as temporary reference elements for easier length sizing of chords for both anterior and posterior repair. The innovative system promotes standardized chord implantation, offering reproducible results while accelerating procedure times.<sup>7,8</sup>



*"The chordal guiding system markedly reduces the time of the procedure by facilitating sizing and knotting."<sup>9</sup>*

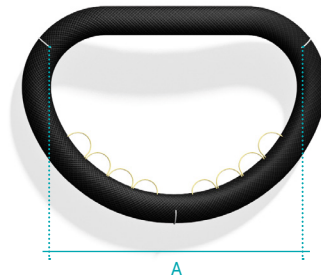
# Information and accessories

## Product ordering information

Ordering Number	Size	A [mm]*	N° Loops
4DM-24	24**	24	6
4DM-26	26	26	6
4DM-28	28	28	6
4DM-30	30	30	6
4DM-32	32	32	6
4DM-34	34	34	8
4DM-36	36	36	8
4DM-38	38	38	8
4DM-40	40	40	8
4DM-42	42	42	8

\* Inner metal core diameter

\*\* Made to order



## References

1. "Is Physiologic Annular Dynamics Preserved After Mitral Valve Repair With Rigid or Semirigid Ring?" Ryomoto et al., *Ann Thorac Surg* 2014;97:492-8
2. "Annular Dynamics After Mitral Valve Repair With Different Prosthetic Rings -Real-Time 3-Dimensional Transesophageal Echocardiography Study." Nishi et al., *Circulation* 2013; 128: A16940
3. "A Comparison of Two Mitral Annuloplasty Rings for Severe Ischemic Mitral Regurgitation: Clinical and Echocardiographic Outcomes." K. Fattouch et al., *Semin Thoracic Surg Summer 2016 Vol. 28, Issue 2, Pages 261-268*
4. "Early Clinical Experience and Echocardiographic Results With a New Semirigid Mitral Annuloplasty Ring: The Sorin MEMO 3D" Bruno et al., *Ann Thorac Surg* 2009;88:1492- 8
5. "Physiological mitral annular dynamics preserved after ring annuloplasty in mid-term period." Ryomoto et al., *Gen Thorac Cardiovasc Surg.* 2017 Nov;65(11):627-632
6. "First-in-man implantation of a Sorin MEMO 3D ring: Mitral annular flexibility is still preserved at 5 years of follow-up!" Santarpino G, Pfeiffer S, Fischlein T, *Int J Cardiol.* 2011 Dec 14
7. "Physiological mitral annular dynamics preserved after ring annuloplasty in mid-term period." Ryomoto et al., *Gen Thorac Cardiovasc Surg.* 2017 Nov;65(11):627-632
8. "Annular Dynamics of MEMO 3D Annuloplasty Ring Evaluated by 3D Transesophageal Echocardiography." Nishi et al., *Gen Thorac Cardiovasc Surg.* 2018 Jan 17
9. "The Novel LivaNova 3D Rechord Semirigid Ring Facilitates Mitral Valve Repair With Artificial Chords: A Matched Pair Analysis." G. Szabó et al., *Poster presented at Mitral Conclave 2017, NYC*
10. "Sovering annuloplasty rings: Experimental pathology in the sheep model." Della Barbera et al., *Cardiovascular Pathology* 14 (2005) 96- 103

## Accessories ordering information

Ordering Number	Name	Description
ICV0664	Uni Handle	Universal Bendable Handle
ICV1342	Extended Uni Handle	Universal Bendable Handle for MICS
ICV1357	Annuloplasty Ring Sizer Set	Complete Sizer Set (24 to 42 mm)
ICV1358	Annuloplasty Ring Accessory Tray	Empty Instrument Tray



Instrument Set



Uni Handle  
Extended Uni Handle for MICS

MEMO 4D Sizer Set  
Now with more transparent heads for a better visibility

# LivaNova

Health innovation that matters

[www.livanova.com](http://www.livanova.com)



Manufactured by:

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MEMO 4D is FDA cleared.

**Caution:** Federal law (USA) restricts this device to sale by or on the order of a physician. For indications, contraindications, precautions and warnings for each device, please refer to the Instructions For Use.

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